

GYRODACTYLUS SHORTI, A NEW SPECIES OF MONOGENETIC TREMATODE  
FROM THE BROOD POUCH OF THE SOUTHERN PIPEFISH,  
SYNGNATHUS SCOVELLI (EVERMANN AND  
KENDALL)<sup>1</sup>

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More than 60 species of *Gyrodactylus* are known from 18 families of fishes encompassing 10 orders. Many of these hosts are euryhaline. Members of this genus are known also from amphibians (tadpoles of the genus *Rana*) as reported by Sproston (1946).

The most valuable and comprehensive studies on the Gyrodactylidae are found in the works of Johnston and Tiegs (1922), Price (1937a, 1937), Mizelle (1938), Sproston (1946), Hargis (1955), and Bychowsky (1957).

Members of the family Gyrodactylidae are viviparous and have an unusual type of life cycle. According to Bychowsky (1957), *Gyrodactylus* sp. from the stickleback produces 4 embryos, one inside the other, from each egg. The first born individual has 3 embryos inside the uterus, the second born has 2 embryos, the third has 1 embryo and the fourth has none. Within this fourth individual, a new egg enters the uterus and the process is repeated. Likewise, as each embryo is born, the remaining mother individual produces a new egg which enters the uterus and 4 more embryos subsequently develop. Bychowsky reports that the number of births from one mother individual is probably not less than 3 or 4, and the period of development of the embryo from egg to time of birth is about 4 to 5 days. Therefore, the life span of the individual *Gyrodactylus* is 12 to 15 days, or possibly longer.

Since gyrodactylids do not have a larval form which may serve to infect new hosts, transfer of the mature parasites may occur when the hosts are close together. Little is known of this phenomenon and further experimental evidence will be necessary for confirmation. These worms are difficult to study due to their minute size and the displacement of internal organs by uterine embryos.

The new species here reported was discovered a considerable length of time after

the host had been preserved in 10 percent formalin. Numerous worms were found attached to the lining of the brood pouch, many being distorted and poorly fixed. Only those specimens having a normal extended appearance were selected for study, and stained whole mounts were prepared using Semichon's Acetocarmine and Harris's hematoxylin. All drawings were made with the aid of a camera lucida. Measurements are in millimeters and ranges are followed by averages in parentheses.

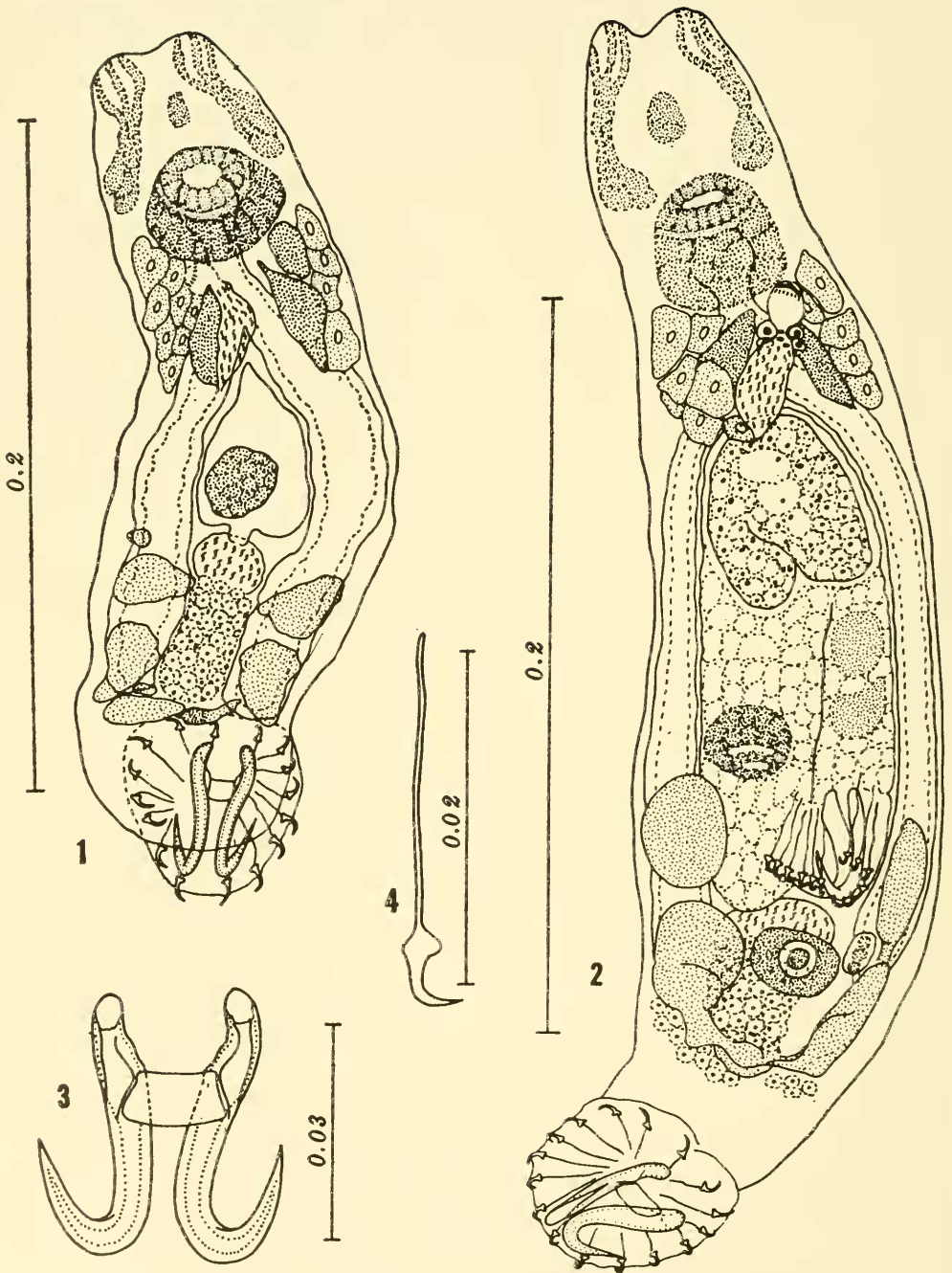
This writer wishes to express his appreciation to Dr. E. B. Joseph, who collected the host from Tampa Bay and donated the specimen to the Division of Zoology, Department of Biological Sciences, Florida State University.

GYRODACTYLUS SHORTI, sp. nov.<sup>2</sup>

*Description*.—Body oval to weakly fusiform, 0.176-0.360 (0.256) long, 0.062-0.106 (0.084) wide. Cuticle thin and smooth. Probaptor a pair of anterior papillate head organs connected by ducts to lateral glands located at level of anterior margin of pharynx. Opisthaptor irregularly oval, 0.044-0.068 (0.053) long, 0.037-0.054 (0.046) wide, armed with 2 anchors, 1 bar and 16 marginal hooklets. Anchors 0.034-0.037 (0.036) long, 0.005 wide, 0.008 deep, with short, diverging, knob-like roots, ventro-mesial knobs and strongly recurved tips. Ventral bar indistinct, trapezoidal in ventral outline, 0.012-0.015 (0.014) long, 0.007-0.009 (0.008) wide, with ends articulating with ventro-mesial knobs on anchors. Dorsal bar absent. Haptor hooks 0.023-0.026 (0.024) long, with long, thin shafts and small, sickle-shaped tips. Pharynx

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<sup>2</sup> This species is named in honor of Dr. Robert B. Short.



Figures 1-4. 1. *Gyrodactylus shorti*, sp. nov., dorsal view, with uterine embryo in early stage of development. 2. Same, ventral view, showing large uterine embryo containing third generation embryo; drawn from holotype. 3. Anchor complex, ventral view. 4. Haptorial hook.

0.025-0.042 (0.032) long, 0.031-0.052 (0.042) wide, muscular, darkly staining; esophagus short; gut bifurcate with non-confluent, thick-walled caeca extending to level of ovary. Testis indistinct, 0.018 in diameter, situated dorsal to anterior margin of ovary and generally obscured by other organs. Cirrus globular, 0.008-0.014 (0.01), located on left submedian ventral surface at posterior margin of pharynx; armed with a single large spine or plate 0.01 long, and a row of minute spines. Seminal vesicle posterior to cirrus with darkly staining prostate cells (?) surrounding junction of organs. Granular cells of two types situated in region between posterior margin of pharynx and anterior margin of uterus. Ovary irregular, averaging 0.027 long, 0.024 wide, located between terminal extensions of caeca. Large, ovum-like object, often referred to as the "ootype", situated ventral to anterior margin of ovary in many specimens. Vitellaria consisting of two irregular, lateral groups of darkly staining bodies ventral to ends of intestinal caeca and joining at posterior margin of ovary. Embryo *in utero* filling most of region between intestinal caeca; smallest measured 0.024 long, 0.020 wide; largest measured 0.137 long, 0.053 wide; average 0.084 long, 0.044 wide. Several specimens contained three embryos, one lying inside the other.

*Host*.—*Syngnathus scovelli* (Evermann and Kendall) southern pipefish.

*Location*.—Brood pouch of one male specimen.

*Locality*.—Tampa Bay, Florida.

*Number studied and measured*.—25.

*Holotype*.—U.S.N.M. Helm. Coll. No. 59597.

*Discussion*.—*Gyrodactylus shorti* resembles *G. funduli* Hargis (1955) but differs from that species in lacking a dorsal bar in the opisthaptor armament, shape of the ventral bar, shape of the ovary, relative positions of the ovary, testis, and ovum-like object ("ootype"), and host.

Finding this new species on a syngnathid fish serves to elaborate the lack of host specificity shown by members of the genus *Gyrodactylus*, and brings the total of orders of fishes on which this genus is found to 11. The present work also constitutes the first report of a monogenetic trematode from any member of the Syngnathiformes.

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#### ABSTRACT

*Gyrodactylus shorti*, sp. nov. is described from the brood pouch of a male *Syngnathus scovelli* (Evermann and Kendall), the southern pipefish. This minute, viviparous trematode was found on one host from Tampa Bay, Florida. Finding this worm on a member of the Syngnathiformes constitutes the first record of a monogenetic trematode on that order of fishes, and brings the total of orders on which species of *Gyrodactylus* are found to eleven.

#### NOTE: A CHANGE OF NAMES

In a recent paper (Holliman, 1961), 24 new species of marine cercariae were described and named. However, since the publication date, four of the names proposed were found preoccupied by names of fresh water cercariae. The marine cercariae involved do not belong in the same genera with the fresh water cercariae having nomenclatorial priority. Nevertheless, if the "collective group" name of *Cercaria* is to be treated as a single genus, and since these "collective groups" are governed by the Law of Homonymy (Article 57, *International Code of Zoological Nomenclature*), nomenclatorial accuracy must take preference over zoological and taxonomic considerations.

Therefore, to avoid confusion in the literature, the following changes in names are proposed:

*Cercaria fimbriata* Holliman, 1961, to *Cercaria stupulosa*, nomen novum, from the Latin *stupulosus*, meaning "covered with fine, short hairs"; *Cercaria pusilla* Holliman, 1961, to *Cercaria glareosa*, nomen novum, from the Latin *glareosus*, meaning "full of gravel"; *Cercaria opaca* Holliman, 1961, to *Cercaria munita*, nomen novum, from the

Latin *munitus*, meaning "armed"; *Cercaria paradoxa* Holliman, 1961, to *Cercaria protensa*, nomen novum, from the Latin *protensus*, meaning "extended".

#### REFERENCE

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A COLLECTION OF THE BAT *Lonchophylla robusta* MILLER  
FROM COSTA RICA

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Bats of the genus *Lonchophylla* Thomas, 1903 are known only from Recent specimens (Simpson, 1945). They have been reported from the Central and South American parts of the Brazilian Subregion of the Neotropical Region (Hershkovitz, 1958), from Bahía in Brazil to Costa Rica (Bourliere, 1955). Cabrera (1957) and Hall and Kelson (1959) recognized five species in this genus (type localities in parentheses): *Lonchophylla mordax* Thomas 1903 (Lamarão, State of Bahia, Brazil); *L. hesperia* G. M. Allen 1908 (Zorritos, Perú); *L. thomasi* J. A. Allen 1904 (Ciudad Bolívar, Venezuela); *L. robusta* Miller 1912 (cave on Río Chilibrillo, Panamá); and *L. concava* Goldman 1914 (Cana, 2000 ft. eastern Panamá). *Lonchophylla robusta* is restricted to Colombia and Panamá (Cabrera, 1957). *Lonchophylla concava* is known only from its type locality (Hall and Kelson, 1959). Goodwin (1946) included both species in his list of Costarrican mammals although none of the specimens he listed was from Costa Rica. Hall and Kelson (1959) did not include all of Panamá in the range map of *L. robusta* but showed the range ending slightly north of the Canal Zone. No specimens of *Lonchophylla* have been recorded from Costa Rica.

Tulane University field crews and Dr. John L. DeAbate (University of Costa Rica) collected the first known specimens of the genus *Lonchophylla* from Costa Rica in 1956 and 1957. These collections represent an extension of the known geographic distribution of the genus and a new record for Costa Rica.

*Materials and Methods.*—Comparison of the specimens from Costa Rica to those from Panamá revealed considerable size variation in this little known species. Sixteen measurements were taken of each specimen (Table 1). Range, arithmetic mean, standard deviation, and standard error of the mean for each measurement was calculated. All measurements made follow those of Cockrum (1955) or are those given in the

original description of *Lonchophylla robusta* (Miller, 1912). Statistical methods employed, including comparison of the means by Student's *t* test, follow Simpson *et al* (1960). All measurements are expressed in millimeters.

The two samples dealt with in this study include 27 specimens from Panamá and ten from Costa Rica. Each sample included adults of both sexes. Complete epiphyseal closure in the humerus indicates that all animals used were adults. The Costarrican sample contained four males and six females collected from an unnamed cave approximately four kilometers southwest of Hacienda de Moravia, State of Cartago, Costa Rica. The sample from Panamá contained nine females and 18 males. Specimens of *L. robusta* examined, the specimen number and institution are: Tulane University, TU 605, 606, 607, 608, 609, 610, 611, 612, 613, 614; University of Kansas, KU 45074\*, 45075\*; University of California, UC 114388\*, 114390\*, 114389\*, 114391\*; Museum of Comparative Zoology, MCZ 26467, 26468, 33444, 33445, 33446, 33447, 33448, 33449, 33450, 33451, 33452, 33453, 33454, 33455, 33456, 33457, 33458, 33459, 33460, 34243\*, 34244\*. All Panamanian specimens of *L. robusta* are topotypes except two (MCZ 34243 and MCZ 34244), collected at Río Pequeni, Salamanca Hydrographic Office, Canal Zone.

Other specimens examined are: 1 *Lonchophylla mordax*, MCZ 33216\*, Cidada da Barra, Río San Francisco, Bahía, Brazil; and 1 *Lonchophylla thomasi*, AMNH 97272\*, Mocajuba, Río Tocantins, Brazil. Those specimens prepared as study skins are indicated by an asterisk.

COMPARISON

*External characters.*—Three external characters (height of the ear from notch, total length, and length of the hindfoot) differ significantly at the 5 percent level (fig. 1). In each instance, the Costarrican animals are smaller than those of the Panamanian sample.